

621.32
For Correctly Lighting



SHOW WINDOWS



SHOW CASES



FACTORIES



AND INTERIORS UNSUITED
TO INDIRECT ILLUMINATION

The Powerful **X-Ray** TRADE MARK REFLECTORS

Catalog 18
Second Edition

G. H. QUARREN, 101 FIFTH ST.,
PHILADELPHIA, PA.

NATIONAL X-RAY REFLECTOR CO.
CHICAGO NEW YORK



X-Ray Reflectors

for

**Direct, Store-Window and
Show-Case Lighting**

Catalog No. 18

Request an Engineering Report

It will oblige you in no way to obtain a comprehensive report, carefully compiled by expert illuminating engineers, giving you facts and figures on your own problem, with our recommendations gleaned from long experience.

Just send a sketch showing the layout of the interior, dimensions, ceiling heights, and number and location of electric outlets. A set of blue prints is best.

X-Ray.
TRADE MARK.

National X-Ray Reflector Co.

General Offices
235 W. Jackson Blvd.
CHICAGO

New York Office
21 West 46th Street
NEW YORK

(1915)

X-Ray Reflectors

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For Show Windows

Commercial and Industrial

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For efficiency in directing and controlling light, and for durability, X-RAY reflectors have no equal. Their brilliancy is everlasting.

This remarkable efficiency, the highest ever known, is due to the method of construction and the process used in the manufacture.

They are made of one piece tough blown glass, having scientifically designed corrugations to break up and diffuse the light rays, thus eliminating all streaks and unevenness in the lighting.

The reflecting surface is pure silver and is protected by a special green backing which absolutely prevents cracking, peeling or blistering.

The inside of the reflector is fire glazed, so that dust cannot adhere to it. The saving in maintenance and lamp breakage is at once apparent, because neither the lamp nor reflector are removed for cleaning, but merely require wiping with a dry cloth.

General Conditions

The prices in this catalogue are F. O. B. Chicago; supersede all previous quotations, and are subject to change without notice.

The package or shipping weights given are approximate, being subject to slight variations.

Reflectors are ordinarily shipped in cartons, at our discretion however in a few exceptional cases reflectors are packed in barrels.

All goods are inspected and packed by experienced packers and delivered to the transportation company in good condition. No claim for breakage in transit will be allowed by us, but must be made to the transportation company.

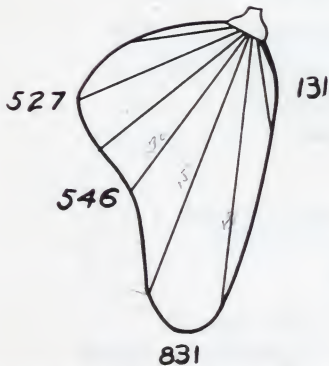
We will not recognize any charge nor will we allow any credit for goods returned if original shipment is made according to purchaser's order and instructions.

The Jove—No. 600

Code Word—Jove

For Mazda "C" Lamps

(Gas filled)



Distribution of light from the "Jove" Reflector, with 100-watt Type "C" Lamp.



An X-Ray reflector for average size windows

*Possible to use as
200 W Mazda C-lamp.
Candle Power directly proportional*

For 100-Watt Mazda "C" Lamp

Width, 10 inches

Height, including neck, $7\frac{5}{8}$ inches

Depth, front to back, $9\frac{13}{16}$ inches

Holder, $3\frac{1}{4}$ inches, Form "A"

Standard package quantity 12

Package weight, 35 pounds

Weight of single reflector, $2\frac{1}{4}$ pounds

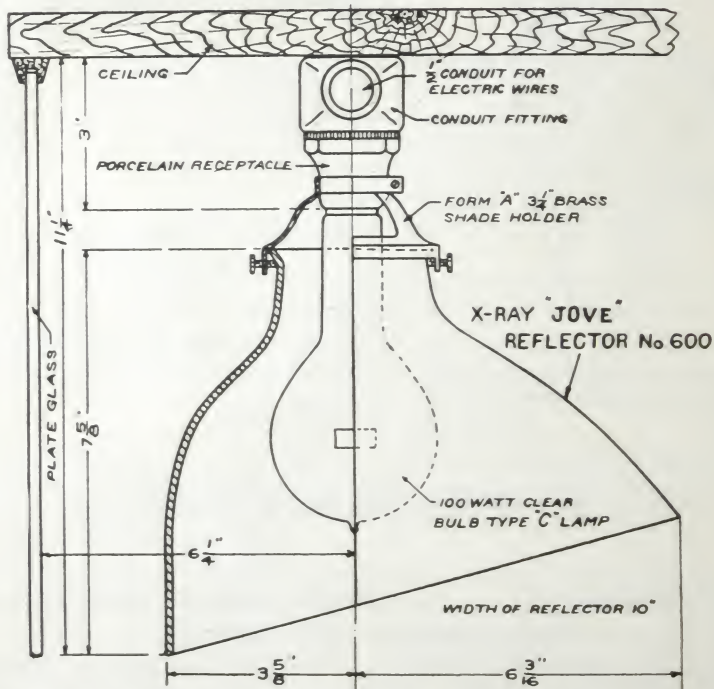
Price, reflector only, \$4.00 each

1090-133234 TCF

The Jove

THE "Jove" is a scientifically correct window lighting reflector with a high temperature backing, designed especially for use with a 100-watt gas-filled Type "C" lamp. This reflector and lamp give the highest intensity of uniform store window illumination ever produced with 100 watts. Its shape completely hides the intensely bright lamp filament and the special corrugations properly break up and distribute the light. The "Jove" has been designed for windows of average proportions, those whose height is one to one and one-half times their depth. Because the lamp filament is completely concealed, reflection from glass or mirror backgrounds is eliminated and this bright filament cannot be seen from the interior of the store. The cut-off at the glass front is very sharp, without any sacrifice of the high intensity so essential at the front of the window. The efficiency is up to the usual X-Ray standard, and cannot be equalled with other makes of reflectors.

Correct Method of Installing the "Jove"



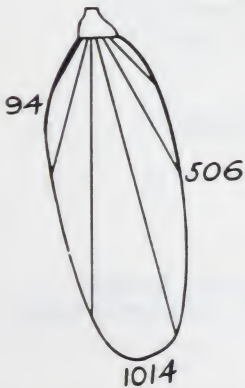
The holder for the JOVE is the form "A." For porcelain receptacles used for moulding and conduit work, such holders as Appleton No. 7323, $3\frac{1}{4}$ ", etc., may be employed, and for brass shell sockets use Holophane "A," etc. When reflectors are installed on outlet boxes use X-Ray fittings shown on page 37 with holder No. 10128.

The Jupiter—No. 610

Code Word—Jupiter

For Mazda “C” Lamps

(Gas filled)



An X-Ray reflector for shallow windows

Distribution of light from “Jupiter”
Reflector, with 100-watt Type “C”
Lamp.

For 100-Watt Mazda “C” Lamp

Width, 10 inches

Height, including neck, $7\frac{5}{8}$ inches

Depth, front to back, $10\frac{1}{8}$ inches

Holder $3\frac{1}{4}$ inches, Form “A”

Standard package quantity 12

Package weight 35 pounds

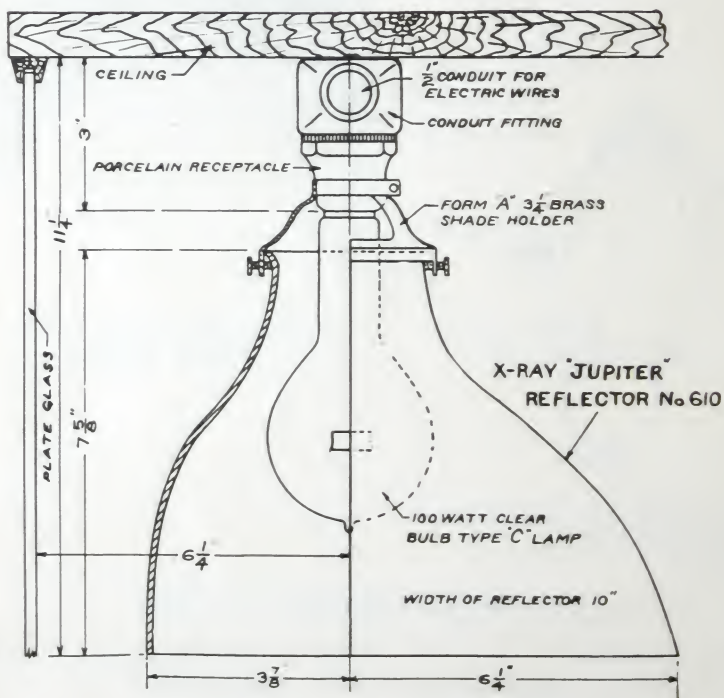
Weight of single reflector $2\frac{1}{4}$ pounds

Price, reflector only, \$4.00 each

The Jupiter

THE "Jupiter," a more concentrating reflector than the "Jove," is used for the brilliant illumination of show windows whose height equals about twice their depth. A new high temperature backing is used which indefinitely withstands the intense heat of the gas filled Type "C" lamps. It has dimensions similar to the "Jove", and uses the same shade holder. Hence, when used together, alternated, they make a neat appearance in the window. They are made as small as possible to secure proper results. The "Jove" or "Jupiter" will earn its initial cost over and over again in increased sales and saving in current.

The Correct Method of Installing the "Jupiter"



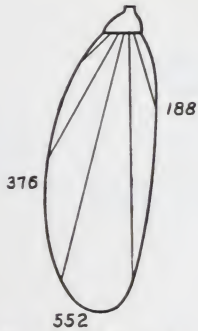
The holder for the JUPITER is the form "A." For porcelain receptacles used for moulding and conduit work such holders as Appleton No. 7323, $3\frac{1}{4}$ ", etc., may be employed; and for brass shell sockets use Holophane "A," etc. When reflectors are installed on outlet boxes use X-Ray fittings shown on page 37 with holder No. 10128.

The Hood—No. 730

Code Word—Hood



An X-Ray reflector for low, shallow windows.



Distribution of light from the "Hood" reflector with 60-watt Mazda Lamp

For 40 and 60-Watt Mazda "B" Lamps

Width 9 inches Height, including neck, $5\frac{7}{8}$ inches
Depth, front to back, $9\frac{1}{8}$ inches

Holder $2\frac{1}{4}$ inches, Form "O" Standard Package quantity 15

Package Weight 26 pounds Weight of single reflector $1\frac{1}{4}$ pounds

Price, reflector only, \$3.00

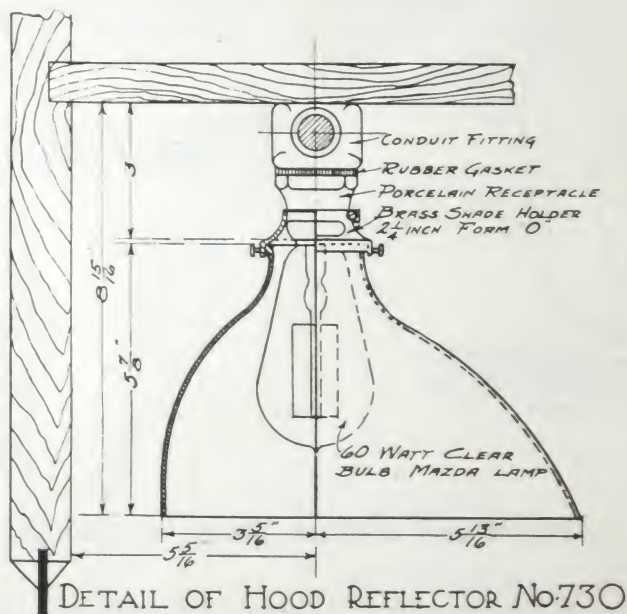
The Hood

THIS "Hood" reflector is designed to light low shallow windows as efficiently as the "Helmet" lights higher windows of the same type.

The design of the "Hood" reflector is such as to produce a high concentration in the window, cutting the light off sharply at the window plate.

The "Hood" closely follows correct window lighting principles. It is installed at the ceiling near the glass front, hides the lamp, and practically eliminates unpleasant glare. It is intended especially for use with 40 and 60-watt unskirted base lamps.

Correct Method of Installing the "Hood"



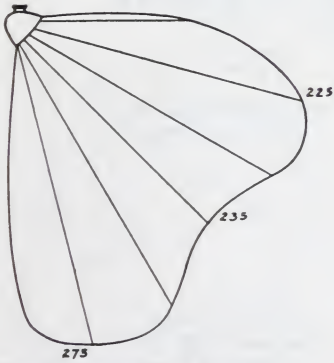
The holder for the HOOD is the form "O." For porcelain receptacles used for moulding and conduit work, such holders as Crouse Hinds NRS $2\frac{1}{4}$ ", Appleton No. 7321, etc., may be employed, and for brass shell sockets use, Holophane, "O," Hubbell, $2\frac{1}{4}$ ", No. 5339, P. & S. $2\frac{1}{4}$ ", No. 28, Plume & Atwood, $2\frac{1}{4}$ ", No. 1264; Bryant, No. 440, etc. When reflectors are installed on outlet boxes use X-Ray fittings shown on page 37 with holder No. 10100

The Scoop — No. 777

Code Word — Scoop



An X-Ray reflector for average size windows



Distribution of light from the "Scoop" reflector with 60-watt Mazda Lamp

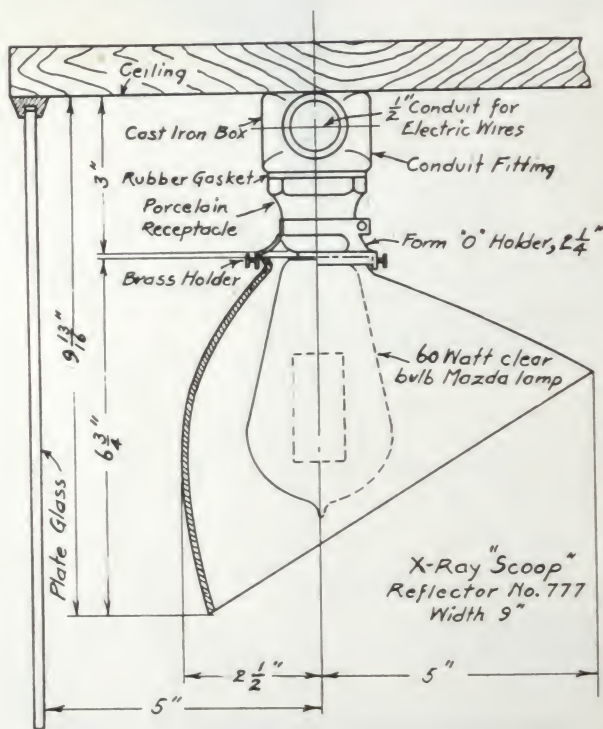
For 40 and 60-Watt Mazda "B" Lamps

Width 9 inches Height, including neck, $6\frac{3}{4}$ inches
Depth, front to back, $7\frac{1}{2}$ inches
Holder $2\frac{1}{4}$ inches, Form "O" Standard Package quantity 16
Package Weight 30 pounds Weight of single reflector $1\frac{1}{2}$ pounds
Price, reflector only, \$3.00

The Scoop

THE "Scoop" is designed to illuminate windows whose depth is about equal to their height, and where trim is made high in back of windows. No light will be wasted on the ceiling of the window or sidewalk. Like all X-RAY reflectors it is of one-piece mirrored glass. It is pure silver plated, and corrugated to break up the light rays. The result is the even flood of brilliant illumination so necessary to bring out the merchandise display in all its effectiveness.

Correct Method of Installing the "Scoop"



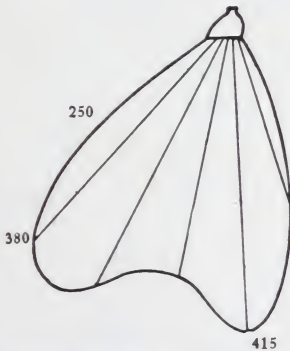
The holder for the SCOOP is the form "O". For porcelain receptacles used for moulding and conduit work, such holders as Crouse Hinds NRS $2\frac{1}{4}$ ", Appleton No. 7321, etc., may be employed; and for brass shell sockets use, Holophane, "O", Hubbell, $2\frac{1}{4}$ ", No. 5339; P. & S. $2\frac{1}{4}$ ", No. 28, Plume & Atwood, $2\frac{1}{4}$ ", No. 1264; Bryant, No. 440, etc. When reflectors are installed on outlet boxes use X-Ray fittings shown on page 37 with holder No. 10100.

The Visor — No. 780

Code Word — Visor



An X-Ray reflector designed for windows with glass, mirror, or low backgrounds



Distribution of light from the
"Visor" Reflector, with 100-
watt Mazda Lamp

For 100-Watt Mazda "B" Lamps

Width $9\frac{1}{2}$ inches	Height, including neck, $9\frac{3}{16}$ inches
Depth, front to back, $10\frac{5}{8}$ inches	
Holder $3\frac{1}{4}$ inches, Form "A"	Standard Package quantity 4
Package Weight 15 pounds	Weight of single reflector, 3 pounds

Price, reflector only, \$4.00

The Visor

MANY show windows have low, transparent, or mirrored backgrounds; others are without backgrounds. Hence, two additional requirements are met with in the scientific design of reflectors for such windows.

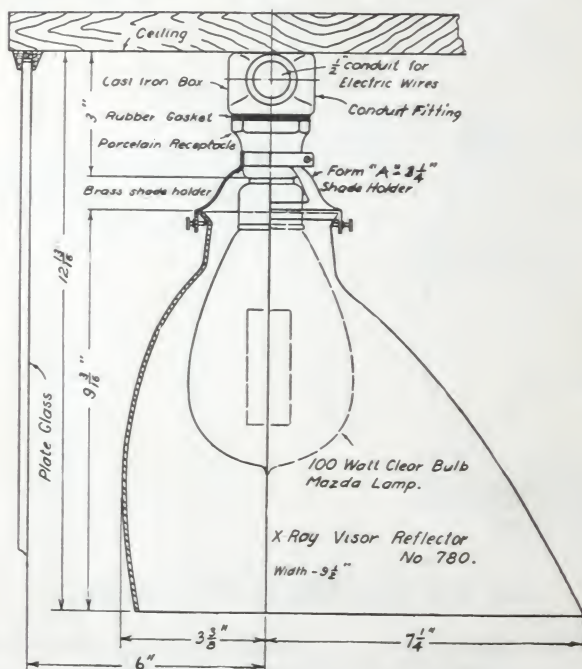
FIRST—The problem of concealing the brilliant filament of the Mazda lamp from the view of persons within the store.

SECOND—The problem of eliminating the possibility of seeing the lamp filament image in the glass or mirrored background, a vitally important feature, since these images are as distracting to the eyes of the observer as the glaring filament of the lamp itself.

The Visor was brought forth to meet the above requirements.

Correct Method of Installing the "Visor"

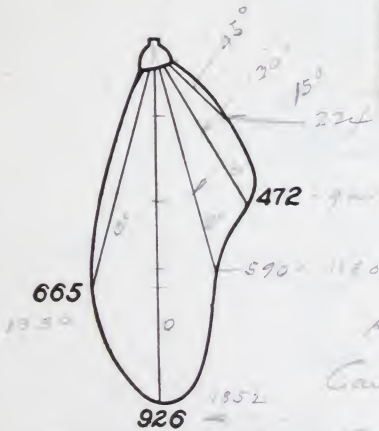
X-RAY VISOR REFLECTOR NO 780 IN SHOW WINDOW.



The holder for the VISOR is the form "A." For porcelain receptacles used for moulding and conduit work, such holders as Appleton No. 7323, $3\frac{1}{4}$ " etc, may be employed; and for brass shell sockets use Holophane "A," etc. When reflectors are installed on outlet boxes use X-Ray fittings shown on page 37 with holder No. 10128

The Helmet — No. 755

Code Word — Helmet



Distribution of light from
"Helmet" reflector, with
100-watt Mazda Lamp

An X-Ray reflector for high,
shallow windows

*Possible to use a 200 w Mazda C
Candle Power directly proportional
CP = 1852 for 200 w*

For 100 and 150-Watt Mazda "B" Lamps

- | | |
|----------------------------------|-------------------------------------|
| Width 12 inches | Height, including neck, 10 inches |
| Depth, front to back, 11¾ inches | |
| Holder 3¼ inches, Form "A" | Standard Package quantity 4 |
| Package Weight 26 pounds | Weight of single reflector 4 pounds |

Price, reflector only, \$5.00

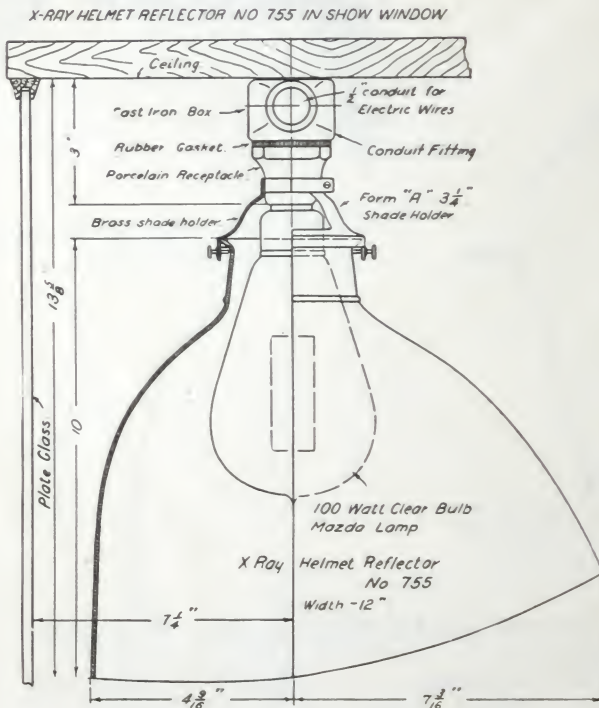
The Helmet

THE "Helmet" is intended for high and large windows; is a genuine searchlight and is very concentrating, as will be noted from its distribution curve.

The concentrated beam of light of over 900 c. p. thrown by this reflector, from a 100-Watt Mazda lamp, down into the window is only made possible by a large reflector of scientific design, having a reflecting surface of pure silver.

The economy obtainable with Helmet reflectors as compared with other methods for lighting of high windows is most remarkable.

The Correct Method of Installing the "Helmet"



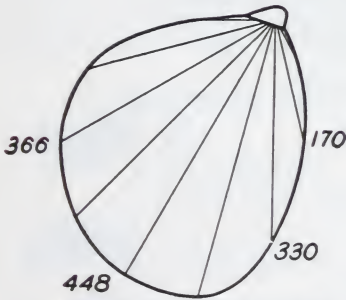
The holder for the HELMET is the form "A." For porcelain receptacles used for moulding and conduit work, such holders as Appleton No. 7323, $3\frac{1}{4}$ ", etc., may be employed; and for brass shell sockets use Holophane "A," etc. When reflectors are installed on outlet boxes use X-Ray fittings shown on page 37 with holder No. 10128

The Poke Bonnet — No. 750

Code Word — Bonnet



An X-Ray reflector for low,
deep windows



Distribution of light from the
"Poke Bonnet" reflector,
with two 40-watt Mazda
Lamps

For 25, 40 and 60-Watt Mazda "B" Lamps

Length 14 inches
Special Adjustable Holder
Package Weight 24½ pounds

Depth 7½ inches
Standard Package Quantity 8

Weight of single reflector, with fittings, 3 pounds

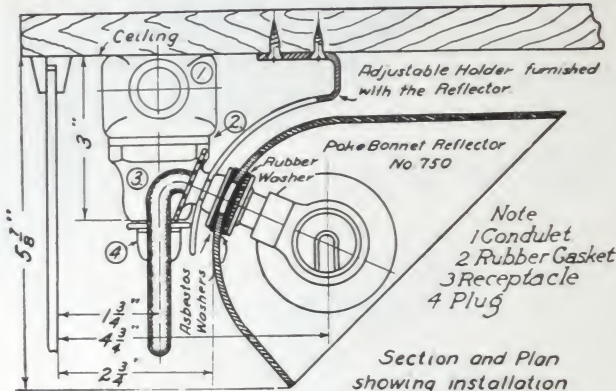
Price, with holder, attachment plug, sockets, complete \$6.50

The Poke Bonnet

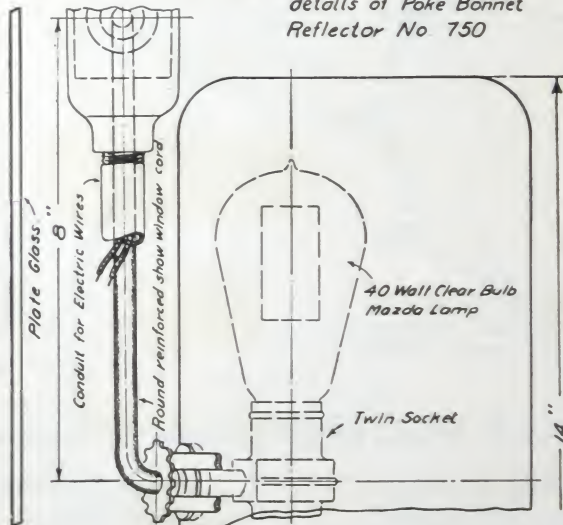
The Poke Bonnet takes two lamps in a horizontal position and is provided with an adjustable fork permitting very easy adjustment to any desired angle, so as to get the maximum benefit from the great reflecting surface. This adjustable holder is easily attached to either ceiling or transom bar.

This is an ideal reflector for use in lighting large show and wall cases, and also for pictures, rugs, etc.

Correct Method of Installing the "Poke Bonnet"



Section and Plan showing installation details of Poke Bonnet Reflector No. 750



Poke Bonnet Parts

Reflector only, with bushing	\$4 50
Twin socket	75
Plug only	25
Fork and Stem	50

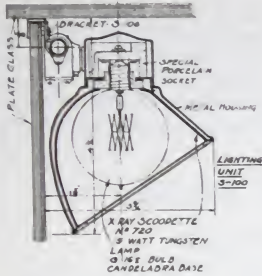


Detail of Adjustable and Stem



Detail of Bushing

The "Scoopette" for Show Cases



SCOOPETTE Lighting Unit No. S-100 includes reflector, socket and cover, housing for reflector, and special clip to hold reflector in housing.

Price, \$2.75 each

The SCOOPETTE was designed primarily for show case lighting. It is used with the equipment, complete from floor outlet to lamp, shown below. Any show case can be lighted with SCOOPETTES.

The problems which have been successfully solved in the development of this equipment are:






The least possible obstruction to a clear view of the interior of the case,—even and efficient illumination with complete concealment of lamp,—low current consumption and maintenance,—smallest possible amount of heat in case,—reasonable cost and expense of illumination,—absolute safety from fire risks,—complete equipment, floor outlet to lamp.



G16 1/2, Candle-base Lamp for Scoopette

Scoopette Fittings

Standard Finish, Black Nickel. Standard Package quantity ten

Cat. No.	List Price	Cat. No.	List Price
	No. S-101 Body or T-fitting with cover \$0.60		No. S-109 Special switch box with black enamel cover, no switch \$1.00
	No. S-102 Elbow with cover .60		No. S-110 Floor offset box, including cover, nipple and coupling 1.15
	No. S-103 Offset fitting with cover, nipple and lock-nut .70		No. S-111 Special flexible conduit, 36" long, including two end fittings .65
	No. S-104 Back fitting with cover .65		No. S-114 Special insulating joint, including nipple and lock-nuts .70
	No. S-105 Cap for tubing .08		No. S-115 Switch for use with S-109 .55
	No. S-106 Bracket .10		
No. S-112 Standard switch box, no cover \$0.30		No. S-113 Switch plate, black nickel finish \$0.25	

Wire for cases, No. 18 extra flexible fixture wire, \$1.60 list per 100 ft.

All of the above fittings are National Electrical Code standard

Complete Show Case Lighting Outfits

The list prices given below are for finished material necessary for equipping square end cases of various sizes mentioned with number of "Scoopettes" specified. Material includes a special insulating joint, a push button switch, a special switch box, which is easily installed, all tubing, elbows, T fittings, Scoopettes, straps or brackets for supporting tubing, cap for end of tubing and sufficient special flexible No. 18 stranded wire to wire entire case. Prices do not include assembling, wiring, installing or lamps. For round end or curve cases see the paragraphs below.

Table of List Prices and Catalog Numbers

Wood Frame or all Glass Cases having Square Ends.

Length of Case	Number of Scoopettes	Degrees of Brightness	Overall Length Including Elbow and Cap	Cat. No. for Back Entrance	List Price
4 ft	2	Bright	45 $\frac{7}{8}$ in.	S- 46G2	\$14 20
6 ft	2	Average	69 $\frac{7}{8}$ in.	S- 70G2	14 70
6 ft	3	Bright	69 $\frac{7}{8}$ in.	S- 70G3	18 20
6 ft	4	Very Bright	68 $\frac{3}{8}$ in.	S- 70G4	21 85
8 ft	3	Average	93 $\frac{3}{8}$ in.	S- 94G3	18 60
8 ft	4	Bright	92 $\frac{3}{8}$ in.	S- 94G4	22 35
8 ft	5	Very Bright	93 $\frac{3}{8}$ in.	S- 94G5	25 80
10 ft	4	Average	116 $\frac{3}{8}$ in.	S-118G4	22 75
10 ft	5	Bright	117 $\frac{3}{8}$ in.	S-118G5	26 35
10 ft	6	Bright	116 $\frac{3}{8}$ in.	S-118G6	30 15
10 ft	7	Very Bright	117 $\frac{3}{8}$ in.	S-118G7	34 25
12 ft	5	Average	141 $\frac{3}{8}$ in.	S-142G5	26 95
12 ft	6	Bright	140 $\frac{3}{8}$ in.	S-142G6	30 50
12 ft	7	Bright	140 $\frac{3}{8}$ in.	S-142G7	34 45
12 ft	8	Very Bright	141 $\frac{3}{8}$ in.	S-142G8	37 80

The prices given above are for stock outfits, including stock lengths of $\frac{3}{8}$ -in. No. 18 gauge brass tubing, finished. In some cases it may be necessary to cut tubing to insure that the outfit fits the case properly. Our charge for cutting, threading and reaming is ten cents per tube. If tubing cannot be run straight through the back post, offset fitting No. S-103 is necessary, add 70 cents list to price given.

Above list prices are based on equipments for cases 24 inches wide and 30 inches high, inside measurements. Where cases are wider than 24 inches or higher than 30 inches, inside measurements, add 3 cents list for every 2 inches or fraction thereof.

We can supply from stock equipment for curved and odd length cases.



Wiring and Assembling

We can ship outfits wired and assembled as shown by illustration for an additional 10% in price. This charge does not include the wiring or assembling of parts from the elbow to the switch box, this is easily done when the outfit is installed in the case.

Bending Tubing for Round End Cases

We are especially prepared to accurately bend tubing for particular requirements.

The charge for bending tubing for a case with a single curved end is 50 cents list and for a case with two curved ends is \$1.00 list; where radii are 17 inches to 31 inches inclusive.

Fitting Tubing for Round End Cases

The charge for fitting and adjusting bent tubing to conform with dimensions sent in for single curved end cases is 75 cents list. For double curved end cases the charge is 85 cents list. This is in addition to above charge for bending tubing.

Method of Installing "Scoopettes"

The diagrams below illustrate the method of installing the Scoopette in typical show cases, and indicate the way in which the various fittings are employed.

One method shows the wires entering the case through a floor off-set box, and the other method shows feed wires coming up the back corner post of the case from the switch.

The method employed will depend upon the construction of the case.

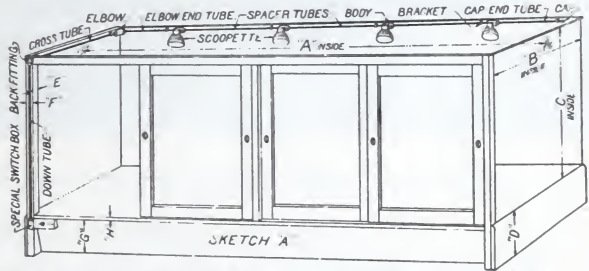
Suggested Spacings for "Scoopettes"

We recommend the following degrees of brightness for various displays in show cases. Refer to table on page 18.

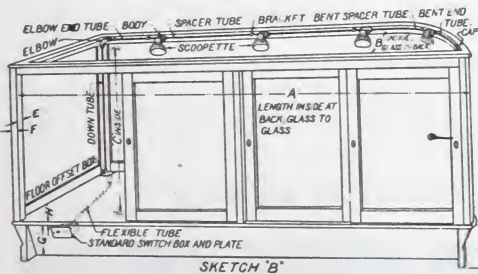
<i>Very Bright</i>	<i>Bright</i>	<i>Average</i>
Jewelry, silverware, cut glass, etc	Dry goods, drugs, clothing, hardware, shoes, etc	Candies, groceries etc

Back Entrance Method

Feed wires are brought up one of the back posts; tubing extends across the case at the top at one end, being connected to the front tube with an elbow. This is most a satisfactory method as it is not necessary to disturb the trim, move the case or tip it over.



This is most a satisfactory method as it is not necessary to disturb the trim, move the case or tip it over.



Floor Entrance Method

The feed wires enter the special floor offset box from underneath the floor of the case, extending up through the tube, which is concealed back of one of the front corner posts. This method is sometimes used for wood

frame cases. Floor entrance outfits can be supplied for same prices as back entrance outfits listed on page 14.

If the show cases in which the SCOOPETTE equipment is to be installed, do not conform with the standard sizes given in our tables, send for the special dimension blank so as to give us exact information. This is very necessary to insure that the equipment will exactly fit the case.



Typical Show Case lighted with "Scoopettes,"—Schuster Department Store

A Test Showing Economy of "Scoopette"

The decision to install 1852 "Scoopettes" in the two Schuster Department Stores in Milwaukee, Wis., was based on the savings that were possible with this equipment. The saving on initial order of lamps was \$807.48 over trough type equipment using 25 watt tubular lamp. The annual saving for lamp renewals will be \$1211.22, and the annual saving in current cost is \$1389.00. In other words, the total net annual saving is \$2600.22, which in five years amounts to over \$13,000.00.

Tests show that the individual aluminized trough reflector, which is used with the 12-inch tubular lamps, delivers only 65.6 per cent as much light onto the trim within the case as the X-RAY Scoopette Reflector. Likewise the continuous trough, lined with strips of mirror, delivers only 51.7 per cent as much light as the X-RAY Scoopette.

Other Applications of the Scoopette



Picture Lighting



Light for Shaving

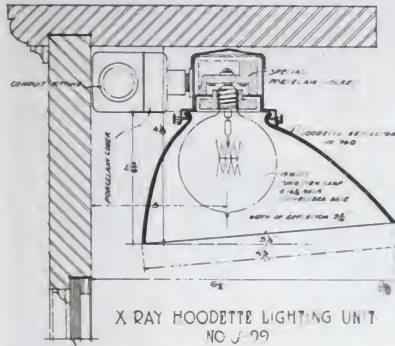


Sewing Machine Lighting



Lathe Lighting

The Hoodette For Wall Cases



Includes reflector, socket, socket cover and shadholder

**Hoodette Lighting Unit
No. S-99**

THERE has heretofore never been satisfactory equipment for lighting low, shallow windows, outside display cases, wall cases, etc. The "Hoodette" has been especially designed for this purpose. It is a miniature Hood reflector and closely follows its scientific lines.

The light is so controlled by this reflector, that, while sufficient is directed toward the back to amply illuminate the upper part of the case, the greater portion is directed downward and brilliantly illuminates the lower part, without loss of light outside the case.

Like all other X-Ray reflectors the "Hoodette" conceals the lamp filament from the eyes of the spectators.

The "Hoodette" is placed at the inside upper front edge of the case where it is hidden by the framework. It is furnished complete with a specially designed combination socket and reflector holder. This socket, which is the same type as used with the "Scoopette," takes a small 15-watt lamp, the most efficient candelabra base lamp made. We cannot over-emphasize the great saving in cost the use of these lamps makes possible with "Scoopette" and "Hoodette" equipment.

HOODETTE

Height, including socket, $4\frac{1}{8}$ inches Depth, front to back, $5\frac{3}{8}$ inches
 Width of reflector $3\frac{11}{16}$ inches For 15-watt G-16 $\frac{1}{2}$ candelabra base lamp
 Holder, special supplied with reflector Standard package quantity 10
 Shipping weight of standard package quantity, 10 lbs.

Price, "Hoodette" unit, each **\$2.75**



Typical Show Case lighted with "Scoopettes,"—Schuster Department Stores

A Test Showing Economy of "Scoopette"

The decision to install 1852 "Scoopettes" in the two Schuster Department Stores in Milwaukee, Wis., was based on the savings that were possible with this equipment. The saving on initial order of lamps was \$807.48 over trough type equipment using 25 watt tubular lamp. The annual saving for lamp renewals will be \$1211.22, and the annual saving in current cost is \$1389.00. In other words, the total net annual saving is \$2600.22, which in five years amounts to over \$13,000.00.

Tests show that the individual aluminized trough reflector, which is used with the 12-inch tubular lamps, delivers only 65.6 per cent as much light onto the trim within the case as the X-RAY Scoopette Reflector. Likewise the continuous trough, lined with strips of mirror, delivers only 51.7 per cent as much light as the X-RAY Scoopette.

Other Applications of the Scoopette



Picture Lighting



Light for Shaving

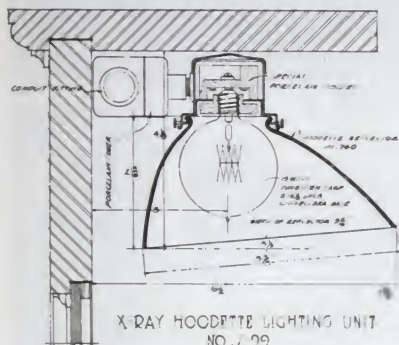


Sewing Machine Lighting



Lathe Lighting

The Hoodette For Wall Cases



Includes reflector, socket, socket cover and shadeholder



Hoodette Lighting Unit
No. S-99

THERE has heretofore never been satisfactory equipment for lighting low, shallow windows, outside display cases, wall cases, etc. The "Hoodette" has been especially designed for this purpose. It is a miniature Hood reflector and closely follows its scientific lines.

The light is so controlled by this reflector, that, while sufficient is directed toward the back to amply illuminate the upper part of the case, the greater portion is directed downward and brilliantly illuminates the lower part, without loss of light outside the case.

Like all other X-Ray reflectors the "Hoodette" conceals the lamp filament from the eyes of the spectators.

The "Hoodette" is placed at the inside upper front edge of the case where it is hidden by the framework. It is furnished complete with a specially designed combination socket and reflector holder. This socket, which is the same type as used with the "Scoopette," takes a small 15-watt lamp, the most efficient candelabra base lamp made. We cannot over-emphasize the great saving in cost the use of these lamps makes possible with "Scoopette" and "Hoodette" equipment.

HOODETTE

Height, including socket, $4\frac{1}{8}$ inches Depth, front to back, $5\frac{3}{8}$ inches
Width of reflector $3\frac{11}{16}$ inches For 15-watt G-16 $\frac{1}{2}$ candelabra base lamp
Holder, special supplied with reflector Standard package quantity 10
Shipping weight of standard package quantity, 10 lbs.

Price, "Hoodette" unit, each \$2.75

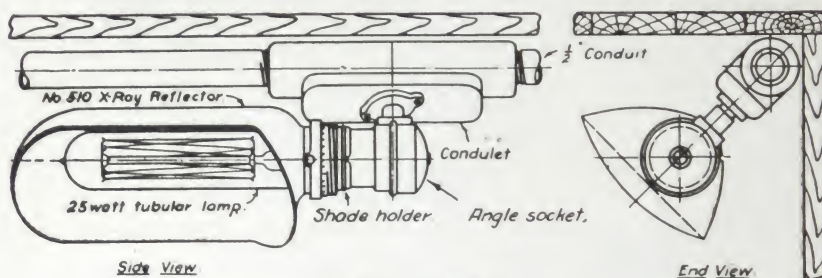
The Midget

Lowest cost for current and maintenance per foot illuminated has been attained with the Midget. It uses the new 25-watt *tubular* Mazda lamp, and is the ideal reflector for lighting small store windows, display-cases, wall-cases, pictures, etc.

This reflector has been very successfully used for the lighting of rooms from coves and cornices.

Each Midget reflector and lamp is an entirely independent unit and the burning out of one will not affect others on the same circuit.

Correct Method of Installing the Midget



THE "MIDGET," No. 510

The Midget requires no special fittings as will be noted from the details above. It can be easily installed with conduit, brass tubing or with metallic moulding. "Midgets" placed one foot apart will give a very brilliant lighting effect.

Spacing and Selection of Reflectors for Show-Window Lighting

The number of reflectors to use is optional with the merchant. No set rule can be established. It is influenced by a number of conditions, such as the brightness of neighboring windows, the intensity of the street illumination, kind of goods on display, color and nature of background in window, and largely the extent of the merchant's realization of the advertising and selling value of bright windows.

The closer the reflectors are spaced, the brighter the window becomes, and vice versa.

In average installations the spacing, or distance from center to center for these reflectors, is about as follows:

Jove	-	-	100 Watt Mazda "C" Lamp	-	24 in.
Jupiter	-	-	100 Watt Mazda "C" Lamp	-	24 in.
Scoop	-	-	60 Watt Mazda "B" Lamp	-	18 in.
Hood	-	-	60 Watt Mazda "B" Lamp	-	18 in.
Visor	-	-	100 Watt Mazda "B" Lamp	-	24 in.
Helmet	-	-	100 Watt Mazda "B" Lamp	-	30 in.
Poke Bonnet	-	-	2-60 Watt Mazda "B" Lamp	-	36 in.

For the vacuum Mazda lamp you will require either SCOOP, HOOD, HELMET, VISOR, or POKE BONNET. These reflectors are not intended for, and should not be used with the gas-filled lamp.

For the gas-filled Type "C" lamp, you will require either the JOVE or JUPITER, which are made especially for this new lamp, both in design and special high temperature backing.

SELECTION

The accompanying charts make easy the selection of the correct reflector for any type of window. An example or two will demonstrate how simple it is to apply these charts to your own problem. To start with, knowledge of all things is necessary—*Height reflectors are to be placed, Depth of window from glass to background, and Height to top of trim or background.*

EXAMPLE 1. (Gas filled Lamp)

Dimensions of window 10' high, 6' deep, 9' trim

Referring to the Chart No 1, locate 10 feet on the left hand vertical scale corresponding to the window front and designated D, 6 feet on the lower horizontal scale, corresponding to the floor line and designated E. From E move straight upward to 9 feet, the height of trim, designated F. Note

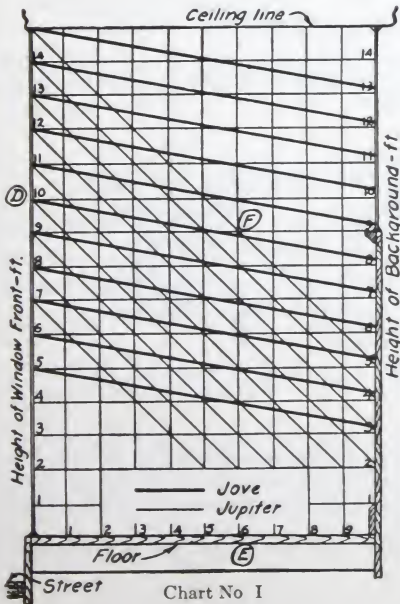


Chart No. I

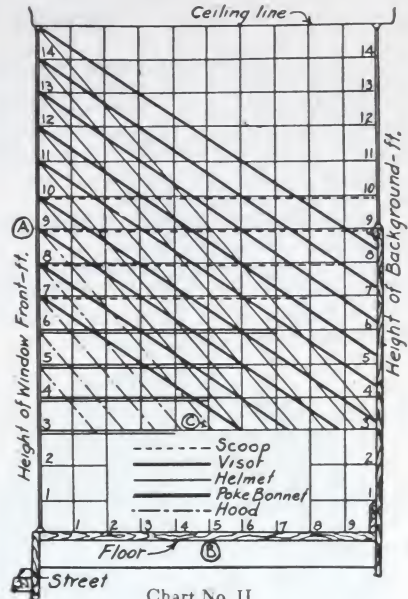


Chart No. II.

that the points D and F are connected by one of the heavy black lines

The key at the bottom of the chart indicates the JOVE reflector is required for this window.

EXAMPLE 2. (Gas-filled Lamp)

Dimensions of window 12' high, 5' deep, 10' trim

In this case the trim is carried unusually high, and the goods near the top of the window must be as well illuminated as those near the floor. Chart No. I indicates that a good, strong light would be delivered as high as 7 feet on the background with a JUPITER reflector. The JOVE throws light higher than the JUPITER and should be installed to take care of the upper part of the trim. Therefore, a combination of JOVES and JUPITERS alternated would give ideal lighting results.

EXAMPLE 3. (Vacuum Lamp)

Dimensions of window, 9' high, 5' deep, 3' trim

Locate on chart No. II the height 9 feet A, the depth 5 feet B, and the height of trim 3 feet C. The line connecting A and C practically coincides with one of the dot dash lines - - - - -, and hence the HOOD reflector is the proper one for this window.

Shade Holders

To avoid trouble in installing reflectors, and to insure that the lamp is held in the proper position in the reflector, follow the suggestions given below:

X-RAY reflectors are made with necks of standard sizes. Regular stock shade holders can be used. The types mentioned will fit the various kinds of brass shell sockets and conduit fittings, and are carried by electrical dealers and jobbers.

Where porcelain receptacles are used, care should be taken to procure porcelains with the shade holder groove

Shade Holders are not furnished with any X-RAY Direct or Show Window reflectors. Except as listed.

The correct type of shade holder for use with each reflector is given on the catalog page where the reflector is illustrated.

The holders listed below meet the adopted standards for X-RAY reflectors for Direct and Show Window lighting.

When Form "O" Holder is Required

For Brass shell sockets, the following may be used.

Hubbell $2\frac{1}{4}$ ", No. 5339

Holophane $2\frac{1}{4}$ ", "O"

Bryant, $2\frac{1}{4}$ ", No. 440

Pass & Seymour, $2\frac{1}{4}$ ", No. 28

Plume & Atwood, $2\frac{1}{4}$ ", No. 1264

For Porcelain sockets, used with Condulets, Unilets, etc.:

Appleton, $2\frac{1}{4}$ ", No. 7321.

Crouse-Hinds $2\frac{1}{4}$ ", No. NRS.

For Outlet boxes, X-Ray No. 10100, see page 28.

When Form "H" Holder is Required

For Brass shell sockets, the following may be used:

Bryant, $2\frac{1}{4}$ ", No. 441.

Holophane, $2\frac{1}{4}$ ", "H."

Plume & Atwood, $2\frac{1}{4}$ ", No. 2525.

For Porcelain sockets, used with Condulets, Unilets, etc.:

Appleton, $2\frac{1}{4}$ ", No. 7322

Crouse-Hinds, $2\frac{1}{4}$ ", NRH.

For Outlet boxes, X-Ray No. 10127, see page 28.

When Form "A" Holder is Required

For Brass shell sockets, use: Holophane, $3\frac{1}{4}$ ", "A."

For Porcelain sockets, used with Condulets, Unilets, etc.: Appleton, $3\frac{1}{4}$ ", No. 7323

For Outlet boxes, X-Ray No. 10128, see page 28.

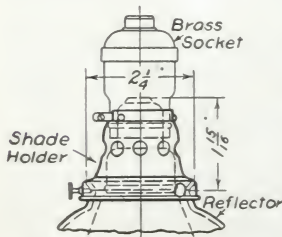


Fig. 2—"H"— $2\frac{1}{4}$ " Position

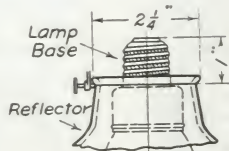


Fig. 1—"O"— $2\frac{1}{4}$ " Position

Shade Holder Positions

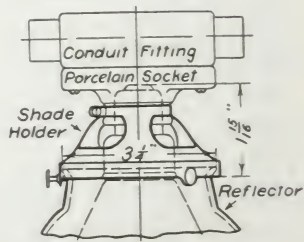


Fig. 3—"A"— $3\frac{1}{4}$ " Position

The correct relations of reflector and shade holder are shown by these figures.

Note that Form "O," $2\frac{1}{4}$ " is a low or flat holder, maintaining a dimension of about 1" from center of shade holder screws to the point of contact of the lamp base. Form "H," $2\frac{1}{4}$ " and Form "A," $3\frac{1}{4}$ " are deeper holders, maintaining a corresponding dimension of about 1 15-16".

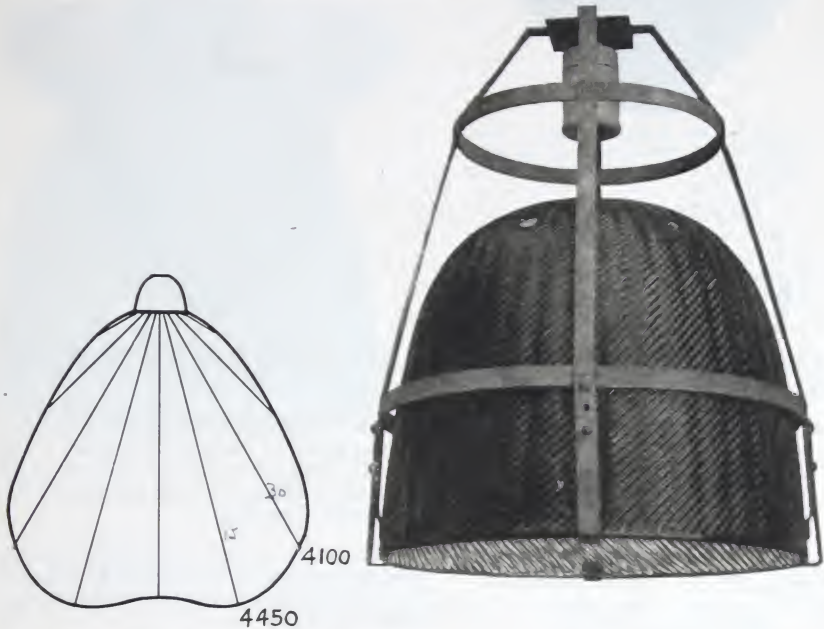
Figures 2 and 3 show the adaptation of holders to brass shell and porcelain sockets respectively.

The Jumbo—No. 770

A Large Semi-Distributing X-Ray Reflector

Code Word—Jumbo

For Large Mazda "C" Lamps



Distribution of light from the No 770 Reflector, with a 1000-watt Type "C" Mazda Lamp

For 500, 750 and 1000-Watt Mazda "C" Lamps

Diameter of reflector, $16\frac{1}{2}$ inches Height of reflector, $13\frac{3}{8}$ inches
Holder, Special Standard package 2
Package Weight 60 pounds Weight of single reflector 10 pounds

Price, reflector only, \$15.00 each

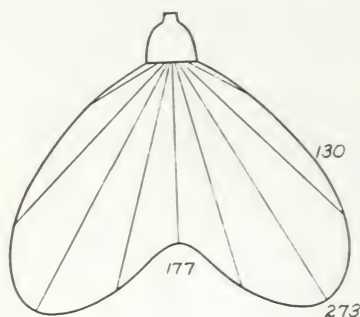
Price, reflector and special hanger, \$27.00 each

The "Jumbo" is designed for the illumination of very large interiors such as armories, coliseums, erecting shops, etc. The holder can be supplied with an adjustable feature which makes it possible to obtain two or three degrees of spread to the light.

Reflector—No. 565

A distributing X-Ray reflector

Code Word—Beech



Distribution of light from the No. 565 Reflector, with a 100-watt Mazda Lamp.



For 100-Watt Mazda "B" Lamps

Diameter $7\frac{5}{8}$ inches Height $7\frac{1}{8}$ inches
Holder $2\frac{1}{4}$ inches, Form "H." Standard Package 15
Package Weight 28 pounds Weight of single reflector $1\frac{1}{4}$ pound

Price, reflector only, \$1.50 each

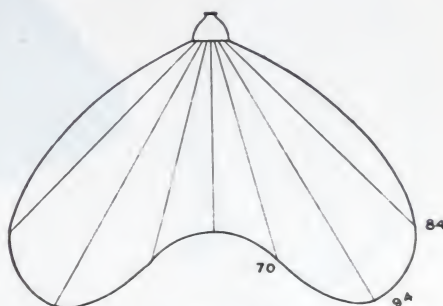
No. 565 is for all practical purposes a larger reflector having the same general characteristics and range of uses as has No. 555. This reflector is, however, rather large for drop cord purposes and is better adapted to the illumination of warehouses, factories, etc., with comparatively high ceilings, being designed for use with 100-watt lamps.

This reflector can be furnished in an aluminum bronze finish for an additional 5% in price.

Reflector — No. 555

A small distributing X-Ray reflector

Code Word — Berry



Distribution of light from the No. 555 Reflector, with a 40-watt Mazda Lamp

For 25, 40 and 60-Watt Mazda "B" Lamps

Diameter $6\frac{3}{8}$ inches	Height $5\frac{1}{8}$ inches
Holder $2\frac{1}{4}$ inches, Form "O"	Standard Package 36
Package Weight 41 pounds	Weight of single reflector $\frac{1}{2}$ pound

Price, reflector only, \$1.00 each

For metal housing see page 38

This is a small size reflector of pleasing lines, principally adapted for localized lighting, such as drop cord and bench lighting in shops over counters and work tables, and for general illumination from comparatively low ceilings, as, for instance, Bowling Alleys, Basements, Store rooms and Corridors.

This reflector can be furnished in an aluminum bronze finish for an additional 5% in price

Reflector — No. 700

A semi-distributing X-Ray reflector

Code Word — Carrot



Distribution of light from the No. 700 Reflector, with a 60-watt Mazda Lamp



For 60 and 100-Watt Mazda "B" Lamps

Diameter 10 inches

Height 5½ inches

Holder 2¼ inches—Form "O" for 60-watt lamps

—Form "H" for 100-watt lamps

Standard Package 18

Package Weight 38 pounds Weight of single reflector 1¼ pounds

Price, reflector only, \$1.50 each

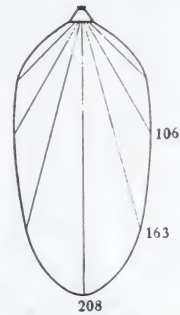
The No. 700 reflector, which is similar in design to the No. 696, is called a semi-distributing reflector because it does not spread the light as far as the distributing reflectors, and yet does not confine the light into such a small area as do the concentrating reflectors. This conical reflector is suited to use over type cases, desks, counters, display tables and in fact all places where an opaque, fairly concentrating type of reflector is desirable.

This reflector can be furnished in an aluminum bronze finish for an additional 5% in price.

Reflector — No. 696

A small concentrating X-Ray reflector

Code Word — Radish



Distribution of light from the
No 696 Reflector, with a 40-
watt Mazda Lamp

For 25, 40 and 60-Watt Mazda "B" Lamps

Diameter 8 inches	Height 5 inches
Holder $2\frac{1}{4}$ inches, Form "O."	Standard Package 24
Package Weight 40 pounds	Weight of single reflector $\frac{1}{2}$ pound

Price, reflector only, \$1.25

A very efficient reflector, giving a concentrated distribution of light—Most of the light given out by this reflector, with a tungsten lamp, is confined to an angle of about 40 degrees.

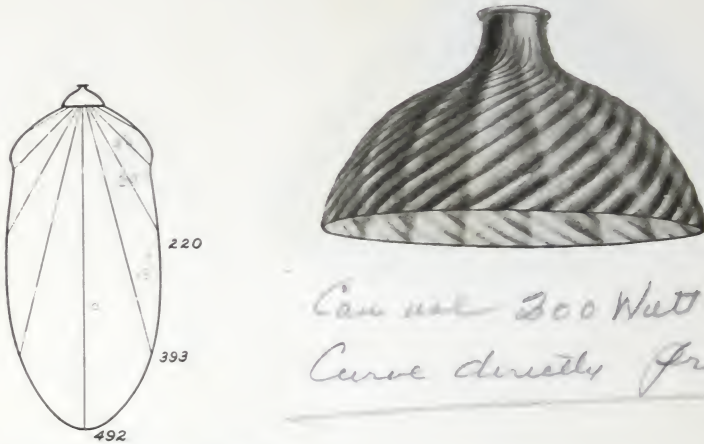
This reflector is frequently employed for the lighting of small show windows, especially those in which jewelery, optical goods, cigars, etc., are displayed, and billiard tables.

This reflector can be furnished in an aluminum bronze finish for an additional 5% in price

Reflector — No. 710

A concentrating X-Ray reflector

Code Word — Crown



Distribution of light from the No. 710 reflector, with a 100-watt Mazda Lamp

*Can use 300 Watt Mazda C
Curve directly proportional*

For 100-Watt Mazda "B" Lamp

Diameter $11\frac{1}{2}$ inches Height $6\frac{3}{4}$ inches
Holder $2\frac{1}{4}$ inches, Form "O." Standard Package 6
Package Weight $21\frac{1}{2}$ pounds Weight of single reflector $2\frac{1}{2}$ pounds

Price, reflector only, \$2.50 each

A comparison of the curves for the No. 565 and No. 710 reflectors will give an idea of how *light* can be controlled with X-Ray reflectors to give any desired result. In controlling the light distribution in this way, long experience in correct or scientific reflector design is involved. Use No. 710 wherever an intense light is desired over a small area, such as over special machinery, benches, tables, etc.

This reflector can be supplied in an aluminum bronze finish for an additional 5% in price

Ceiling Fitting With Pull Switch Attachment



A ceiling fitting with a pull switch attachment that fits standard outlet boxes and gives control over each individual lamp.

All types of direct lighting reflectors can be used with this fitting.

Three special shade holders "O," "H," and "A" have been designed to fit the socket.

Fitting can be supplied with or without switch.

The following numbers and prices will apply to the fitting in its various combinations. Prices do not include reflectors.

	List Price each	Std. Pkg.	Pkg. Wt. lbs.
No. 20, complete fitting with switch attachment, without shade holder, with pigtail socket.	\$2.95	10	16½
No. 30, same as above but with clamping socket.			
No. 21, fitting without switch attachment, without shade holder, with pigtail socket	1.75	10	12½
No. 31, same as above but with clamping socket.			
No. 38, fitting with switch attachment, with No. 10129 adapter, no shade holder, no socket	2.85	10	16½

Shade Holders

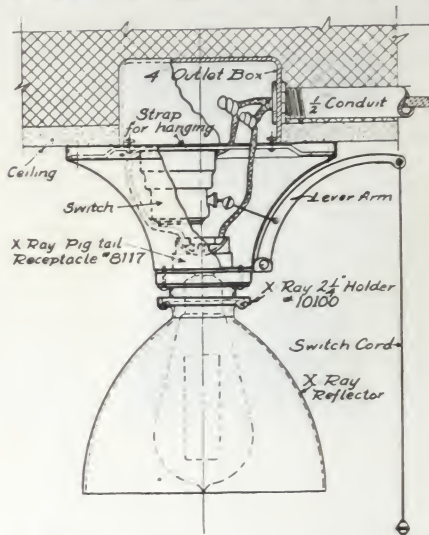
(Illustrated on page 38)

No. 10100, form "O," 2¼" holder	\$0.15	10
No. 10127, form "H," 2¼" holder	.20	10
No. 10128, form "A," 3¼" holder	.25	10

Finish

Standard finishes are black nickel No. 27 and special brass No. 2 (practically the same as brush brass). Other standard metal finishes 15% extra. In standard packages the finishes may not be mixed.

Correct Method of Installing Ceiling Fitting

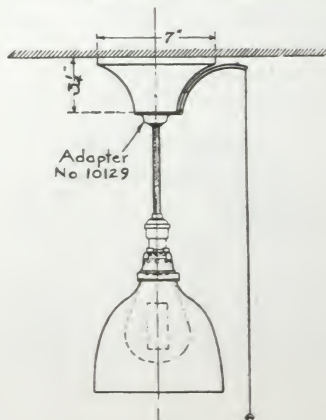


Ceiling Fitting as attached to Ordinary Outlet Box

This ceiling fitting can be used with all types of direct lighting reflectors. The unit is arranged with a strap for attaching to the lugs of a standard outlet box, or to a fixture stud, and is especially desirable for installations in shops, factories, work rooms, stores, garages, printing plants, power plants, kitchens, laundries, etc. It is approved and can be used without an insulating joint.

When it is desired to suspend the reflector a distance from the ceiling the adapter No. 10129 with center bushed opening is used in place of the shade holder.

In this case Receptacle No. 8117 is not used. The reflector is attached by a standard shade holder to a brass shell socket at the end of the drop cord as shown in the illustration below.



Outlet Box Covers, Sockets and Shade Holders

For all types of direct lighting reflectors

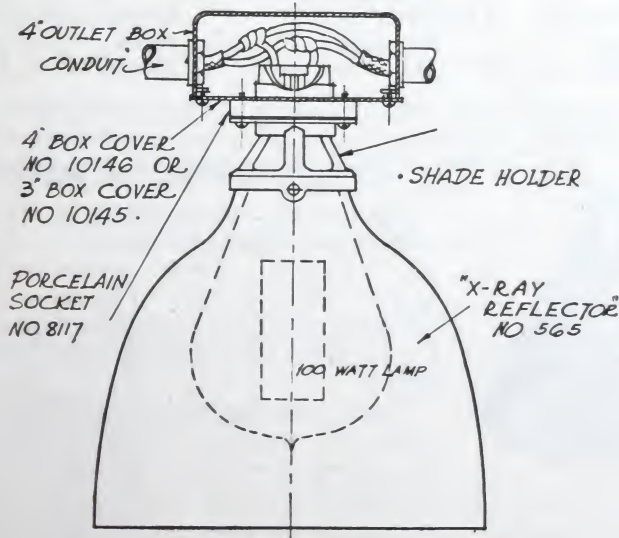


Complete Unit, with Cover, Socket and Form O-2¼" Holder

A complete lighting unit can be made up to cover standard outlet boxes with a reflector, correct shade holder, socket and box cover.

The devices shown here are economical, compact, correctly designed and easily installed. The shade holders are made of stamped steel, and are remarkably rigid. The holder is secured in place by two screws which thread into the box cover and serve to keep the porcelain receptacle in position.

These covers, sockets and holders can also be used in show windows, for cove lighting units, etc., etc.



Manner of Attaching to Standard Outlet Box

Outlet Box Covers, Sockets and Shade Holders

Shade Holders

Shade holders shown conform to the standards given on page 26.



Form O-2 $\frac{1}{4}$ " Holder
No. 10100
15c each



Form H-2 $\frac{1}{4}$ " Holder
No. 10127
20c each



Form A-3 $\frac{1}{4}$ " Holder
No. 10128
25c each

Metal parts are zinc plated. Standard package quantity for all parts is *Ten*.

Sockets and Box Covers

Receptacles can be supplied with pig tails or with clamping terminals.

The round box covers of 3" and 4" sizes are punched and tapped especially for the X-RAY sockets.



Pig Tail Socket
No. 8117
38c each



Clamping Socket
No. 8118
30c each



Round box covers
No. 10145 3" Cover 10c each
No. 10146 4" Cover 14c each

Metal parts are zinc plated. Standard package quantity for all parts is *Ten*.

Metal Housings For Reflectors

Spun covers such as shown by the illustration, can be supplied for the No. 555 and No. 565 reflectors. These covers conform in shape to the reflector. The spinning is perforated at the top, with three holes and can be fitted to the ordinary 2 $\frac{1}{4}$ inch shade holder.

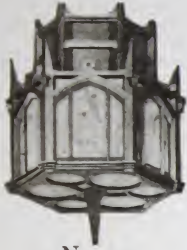
These housings can be used on reflectors which are suspended on drop cords or with the fittings illustrated on pages 35 and 37.



No. 43. Cover only for No. 555 reflector, list \$3.10 each. Package quantity, 10.
No. 44. Cover only for No. 565 reflector, list \$3.35 each. Package quantity, 10.

Finish, brush brass or white.

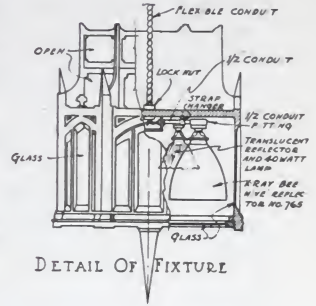
Fixtures for X-Ray Reflectors



No. 15

Churches, stores, display, assembly, billiard rooms, gymnasiums, etc., having ceilings heavily beamed or otherwise unsuited to indirect lighting, can be attractively and efficiently lighted by these fixtures, in art glass or metal.

When special fixtures are necessary we will be glad to submit designs. Those illustrated are merely suggestive of the possibilities of combining the high efficiency of the X-RAY reflector with artistic and harmonious fixtures.



No. 14



No. 48



No. 13

Wire Guards for X-Ray Reflectors

No. 17. A very practical and substantial guard for "Bee Hive" No. 765, to be used in gymnasiums, shops, etc. The bottom is hinged so as to expose lamp and reflector for cleaning and renewals. Size, 15 inches diameter; 16 inches high.

Made of No. 11 iron wire, $1\frac{1}{2}$ inch mesh with $\frac{3}{8}$ -inch round iron frame. Finish green.

Price, guard only, \$9.00 each list.



No. 17

No. 37 Guard for reflector No. 565 is exactly similar to No. 17, but smaller in size. Size $9\frac{1}{2}$ inches diameter; $9\frac{1}{2}$ inches high, made of No. 12 iron wire, $1\frac{1}{2}$ inch diamond mesh on 5-16 inch round iron frame. Finish, green.

[Price, guard only, \$7.20 each list.



No. 37

Books About Lighting

As originators and perfectors of modern methods in lighting, the research work of our Engineering Department and the rapid spread of concealed lighting methods makes necessary the publication of authoritative data in book form to guide architects, engineers and contractors in planning and installing modern lighting and also to standardize methods. Many are gladly sent free, others are very elaborate and are published for certain classes of professional men.

Technical Publications

PORTFOLIO OF DETAILS AND DATA:—The planning and specifying of interior lighting. Free to practicing Architects. To others, \$5.00 net.

ENGINEERING DATA BOOK:—Highly technical description of X-Ray Lighting equipment—its design, construction and purposes.—Free to practicing illuminating engineers. To others, \$5.00

ENGINEERING BULLETIN No. 3:—A terse, technical explanation of the method of laying out and figuring scientific installations of the Eye Comfort Lighting System. Free to everyone.

Books on Indirect Lighting

Single Copies Free on Request

CORRECT PRACTICE IN CONTROL OF LIGHT; by Augustus D. Curtis.—A discussion of so-called "semi-indirect" lighting in plain language.

STORE, OFFICE AND BANK ILLUMINATION:—Illustrating the efficient lighting of the most modern interiors in these classes.

THE ARTISTIC LIGHTING OF THE HOME; by Evelyn Marie Stuart.—A reprint of a recent article in the Fine Arts Journal.

CHURCH ILLUMINATION:—The scientific illumination of the House of Worship.

THE LOGICAL LIGHT FOR THE HOSPITAL:—Setting forth opinions of prominent Surgeons, doctors and hospital architects, with descriptions of installations.

INDIRECT LIGHTING IN AUDITORIUMS:—A reprint from the transactions of the Illuminating Engineering Society.

THE CURTIS PORTABLE LAMP:—Description and prices of this wonderful new art lamp which combines useful indirect illumination with its decorative features.

Books on Direct Lighting

GREATEST EFFICIENCY IN REFLECTION OF LIGHT:—Describing and illustrating the many uses of X-Ray direct lighting reflectors.

STANDARD WINDOW REFLECTORS:—The most comprehensive book published covering this important field of illumination—store windows.

THE SCOOPETTE:—A thorough exposition of modern showcase lighting emphasizing its economy and great sales value.



Engineering Department, National X-Ray Reflector Co.

This department is responsible for some of the most noteworthy lighting successes of recent years. They are at your service for the solution of your lighting problems of any kind.



G. D. SWANSON CO., Engineers,
FERRY BLDG.,
PHILADELPHIA, PA.

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